

ENGINEERING  
TOMORROW



May, 2020

Cooling and Industrial Automation

# Danfoss Tech Insider



## Release of Improved Cold Room controller AK-RC 111/113

The new family follows the same family structure of the product it replaces and adds the following main functionalities:

- New Auxiliary relay added. Now all the versions will have 6 outputs: Compressor, Fan, Defrost, Light, AUX1 and AUX2
- RS485 serial always available. No need to select the use for Modbus, as in the previous version.
- AUX output can be used as a redundant alarm
- Reduced set function (night set) from digital input
- Compressor error handling in case of ambient probe failure
- Configurable for cold or hot applications (with extended probe reading range, -45 to 99 °C)
- New defrost management functions (on start-up, smart, on-screen display, remote start/stop)
- Buzzer exclusion
- Both digital inputs are now fully configurable for maximum flexibility
- Auxiliary relays can also be configured to indicate the system standby status

Form and shape are not changing and there is no impact on installation.

Existing customers using the AK-RC101/103 family can directly switch to this family as the wiring, installation and parameter's set has not changed. Only impact is for applications that will make use of the added capabilities.

The new family will be available for sale in July 2020 and at that point the previous version will be retired from the market. Because the direct replacement capability, no stock of the older version will be maintained past this date. All new sales will be converted to the equivalent new code and warranties or replacements will be honoured with the equivalent new code.

| Old Code Danfoss | New Code Danfoss | Description              |
|------------------|------------------|--------------------------|
| 080Z3200         | <b>080Z3220</b>  | AK RC 111 MONO 16A       |
| 080Z3201         | <b>080Z3221</b>  | AK RC 113 TRI 4.5 - 6.3A |
| 080Z3202         | <b>080Z3222</b>  | AK RC 113 TRI 7 - 10A    |
| 080Z3206         | <b>080Z3226</b>  | AK RC 113 TRI 11 - 16A   |
| 080Z327          | <b>080Z3227</b>  | AK RC 113 TRI 14 - 20A   |

[Optyma™ control AK-RC 111 User Guide](#)

[Optyma™ control AK-RC 113 User Guide](#)

## R448A approved for packaged Optyma™ condensing units

R448A can now be used on Optyma™ Slim Pack and Optyma™ Plus models and meet Ecodesign 2018 requirements. This change affects all Optyma condensing units with compressor types AJ already released for use with R449A

We have conducted reliability and performance tests on our full range of reciprocating compressors with R448A. This Azeotropic, non-ozone depleting, non-flammable refrigerant with low global warming potential (GWP = 1387) is a perfect drop-in replacement for R404A in medium-temperature commercial refrigeration applications without the risk of additional glide.

Condensing unit performance data is similar to R449A (max. 3 % deviation), though more information will be available later this year inside our catalogue. Please refer to Coolselector®2 for further information.

**For Optyma Plus controller:**

- An R448A setting has been upload onto updated electronic controller version (3.40).
- For products in the field, use the R449A setting point, which is close to the R448A setting point.

**Implementation date are**

- Optyma Plus P00 version and Optyma Slim Pack W05 and W09: Week 10, SN 116954CG1020

Otherwise, the products remain unchanged in terms of code numbers, descriptions, designations, equipment, and features.

**New ICFC 20P1 module for ICF 20 Valve Stations**

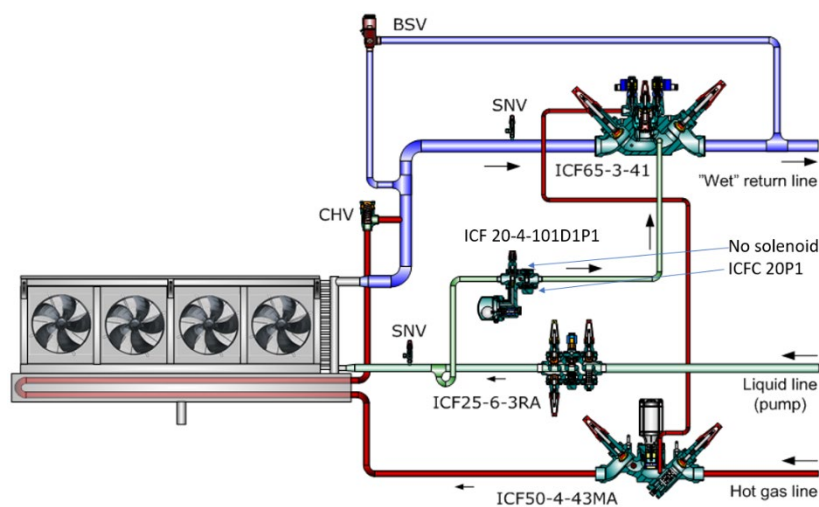
The liquid drain method is widely acknowledged as the most efficient hot gas defrost method within industrial refrigeration. This method ensures that liquid condensate is drained at the lowest possible pressure, resulting in up to a 90 % reduction in blow-by gas.

Such a significant reduction of blow-by gas means that almost no blow-by gas needs to be re-compressed, releasing compressor capacity and reducing energy consumption.

**ICFC 20P1 – loaded check valve module**

The main application for ICFC 20P1 is when used together with our ICFD 20 defrost module. Using this combination, ICFC 20P1 together with ICFD 20, allow us to exclude the need of the ICFE 20 solenoid valve in the defrost drain line.

The application in question, is when ICFD 20 is piped into the suction line, with a lower pressure than the pressure at the inlet of the ICFD during normal cooling, then the ICFC 20P1 (correspond to a loaded check valve of typically (0.7 bar/10 psi) must be installed. The ICFC 20P1 prevents flow of refrigerant through the ICFD to the suction line during cooling.



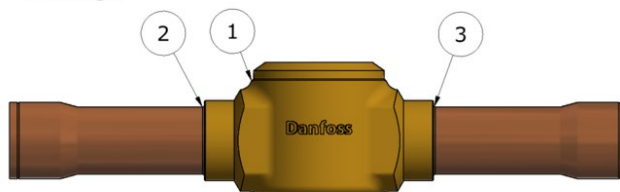
## Sight Glass SG SGP design upgrade on solder and flare versions

Danfoss is actively working on safe and environmentally friendly solutions using alternative refrigerants. With this focus in mind, we have qualified more refrigerants as well as upgrading the design of SG and SGP solder and flare types. Socket type sight glasses are outside of this project's scope.

All the tests and qualifications of the new versions were conducted in accordance with the EN/UL guidelines. There will be no change in the function of the sight glass: the lay in lengths are the same as the existing ones and the code numbers of the products will be remained the same to provide an easy switchover.

### Solder version

Old design



New design



First samples will be available on August 2020 and the roll out is planned to be on January-March 2021.

## AK-CC 210 and EKC 2xx: Defect connector for option module

It has come to our attention that there is a damaged connector in the back of the slot where the option card is inserted into the controller on AK-CC 2xx/EKC 2xx controllers. On these controllers this can cause failing power supply to an inserted device.



Using EKA 183 a missing power supply will cause the controller to turn completely off (controller is kept in a permanent rest mode).

Using EKA 178 Modbus modules or EKA 179 Lon modules for communication the controller will not reset, but without supply the module will not be able to communicate.



## Service valve pipe extension for Optyma™ Slim Pack range W04 and W08

As part of the continuous product upgrade of our Optyma™ Slim Pack range, Danfoss has decided to change the mounting orientation and length of the connecting pipes of braze type service valves on W04 and W08 versions.



Service valve with braze type connection (W04 and W08 versions)



For existing field replacements, the tubes for suction and liquid lines need to adjust in the field with the extended service valves for brazing.

## Fusible plug stop on Optyma™ Slim Pack, Optyma™ Plus, and Optyma™ Plus Inverter

All packaged condensing units (W05/W09/P00/P01/P02) will no longer be manufactured with a fusible plug (NPT 1/4 inch) installed in the liquid receiver. Instead, a blank adapter plug (NPT 3/8 inch) will be mounted on liquid receivers.

### Technical features

- The fusible plug was used in condensing units for damage limitation in the event of external fire, according to EN 378-2:2016 article 6.2.2.3, to release the refrigerant when there is excessive heat from an external fire, not from the refrigerant.
- Fusible plugs are not intended to be used as primary protection against excessive pressure per EN 378-2:2016: article 6.2.6.2, as it reacts to temperature, not pressure.
- The installer shall regard damage limitation requirements as appropriate for the pressure rise in case of external fire. This may include measures as listed in EN378-2 below. Other alternatives reaching the same level of safety may be applied.

| Measures   | Additional information                   |
|--|--|
| Apply suitable pressure relief devices   | Calculation according to EN 13136        |
| Place the refrigerating systems in a separate refrigeration machinery room which complies with EN378-3 | According to EN 378-3                    |
| Allow the migration of the refrigerant into other parts of the refrigeration system                    | Worst case condition shall be considered |

- To allow the installer to apply a pressure relief device, we have provided a provision on the top of the liquid receiver which is fitted with an adapter port with a 3/8 in. NPT connection (picture below).
- No pressure relief device is factory-assembled on condensing units. Fitting a pressure relief device is the responsibility of the installer.

Fusible Plug (1/4 in. NPT)



Blind Adapter Plug (3/8 in. NPT)



## Details for Additional Information

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